

SMUG

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P.O. Box 101 Butler, WI 53007

THIS MONTH:

- Bill On QL Basic
- The February Meeting
- Dr. Dreger On QL "C"
- Presidents Message
- And Other Great Things

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NEXT MEETING DATE: 03/01/89

Send all contributions by the
first day of the month to:

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BILL ON QL BASIC

Here we are again. QL basic is a strange new subject to the old Sinclair Basic programmer. There are many new instructions and most of the old ones have many new parameters (qualifiers). There is one thing I like and that is the checking of upper and lower case. Instead of IF a\$="y" or a\$="Y" you can use IF a\$="y". This checks for either upper or lower case. The "y" can be either upper or lower case in the comparison. The CLS instruction is the opposite idea. Just CLS will clear only the default screen. To clear the any other screen you must use #x where x is the screen (channel number) you wish to clear. For example;

CLS #0 will clear the bottom (command) part of the screen.

CLS #1 will clear the right hand, default, screen in monitor mode or current screen in TV mode.

CLS #2 will clear the left hand screen in monitor mode.

Note the #x is where the channel is assigned. These channels can be closed and reassigned to somewhere else. Note do not close channel 0 or the keyboard will be unusable. You can do it within a program but beware if it is not reopened again the only way to use the keyboard after that is to RESET. Along with this is the listing of a program to the printer. There is no LLIST so you must assign a channel to the printer and then LIST to that channel. For example;

OPEN #3,ser This will open channel 3 to serial port #1. Then LIST #3 will route the list to whatever is connected to SER #1 and when the list is done the channel will close automatically.

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MULTITASKING ON THE 2068

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After playing with a QL and seeing its clock run independently of every thing else, I decided to try the same thing on the TS2068 using the IM 2 interrupt mode. Here is the results of that attempt. Very simply, it prints a digital clock to the upper right hand corner of the screen while other programs are running.

For a clock to really work, it should be what we call transparent, i.e., work under all situations. This is almost true on the TS2068 but some situations will cause the program to crash. The main reason is that the clock can't have its own window and must share with the main screen. This messes up editing and listing basic programs while the clock is running. We can, however, keep it running without printing to the screen with a few pokes to the code and repoke when we want to print the clock again.

The use of the IM 2 mode is fully discussed in my book, "ADVANCED 2068 MACHINE CODE--VOLUME 1" and is not a subject easilly understood. However, let it suffice to say that the programm uses the space from 64800 up to the UDG area of high memory--don't overwrite it with code from anyother program. It can be relocated if some precautions are taken.

Contrary to some advice you may have read, to initiate the IM 2 mode you need 257 bytes of memory starting at a page boundary (L = 0). These must be loaded with the same high byte address of the jump address. Selecting this at 65024 and writing in 253's with I loaded with 254, causes the interrupt to jump to address 253/253 (65021) which is just 3 bytes below the start of the 253 code talked about above and just enough room for a JP instruction. I have found out that with Aerco Disks activated, (OUT 244,1), the IM 2 mode sometimes crashes--which means that the CPU isn't necessarilly putting a 255 on that data bus. Other peripherals may do the same thing. A word to the wise...

The operating procedure of the actual clock routine will setup a print line with the proper CODE characters and then use a RST 16 to print them to the screen. The clock doesn't rely on the frames counter but the command BEEP, LPRINT, LLIST, COPY, SAVE, CAT, LOAD, MERGE, VERIFY, MOVE, ERASE, and repeat DELETE do what is called a DI (disable interrupts) which means no interrupts allowed until they are finished. This means the clock would not be updated every 1/60th of a second and so would run slow. That time can be considerable when saving, loading or verifying using tape.

Here is the code given in decimal so you can enter it with a for/next loop from basic.

THE STOP CLOCK ROUTINE:

64800	229	STOP	PUSH HL
64801	62,63		LD A,63
		;VALUE FOR I REGISTER RETURN	
64803	237,86		IM 1
64805	237,71		LD I,A
64807	225		POP HL
64808	201		RET

THE START CLOCK ROUTINE:

64809	243	START	DI
64810	229		PUSH HL
		;SO WE CAN GET BACK TO BASIC	
64811	62,254		LD A,254
64813	237,71		LD I,A
		;SET INTERRUPT REGISTER	
64815	33,0,254		LD HL,65024
		;SETUP INTERRUPT TABLE	
64818	69		LD B,L
64819	61		DEC A
64820	119	TBLP	LD (HL),A
64821	35		INC HL
64822	16,252		DJNZ TBLP
64824	35		INC HL
64825	119		LD (HL),A
64826	237,94		IM 2
64828	225		POP HL
64829	251		EI
64830	201		RET

THE CLOCK ROUTINE:

64831	22	DATA	DEFB 22
-------	----	------	---------

;AT THE 1st 13 bytes are data		;TICK LOSEC	
64832 0,24	DEFW #1800	64883 126	LD A, (HL)
;0,24 of which the 1st		64884 254,58	CP 58
64834 48	DEFB 48	;IS COUNT TO "10"?	
;"0" HIHR BYTE 11 will be		64886 32,61	JR NZ,PRINT
64835 48	DEFB 48	;READY TO PRINT IF NOT	
;"0" LOHR BYTE be printed		64888 54,48	LD (HL),48
64836 58	DEFB 58	;RESET LOSEC	
;":" COLON BETWEEN HR & MIN		64890 43	DEC HL
64837 48	DEFB 48	;TO HISEC	
;"0" HIMIN BYTE		64891 52	INC (HL)
64838 48	DEFB 48	;TICK HISEC	
;"0" LOMIN BYTE		64892 126	LD A, (HL)
64839 58	DEFB 58	64893 254,54	CP 54
;":" COLON BETWEEN MIN & SEC		;IS COUNT TO "6"?	
64840 48	DEFB 48	64895 32,52	JR NZ, PRINT
;"0" HISEC BYTE		;READY TO PRINT IF NOT	
64841 48	DEFB 48	64897 54,48	LD (HL),48
;"0" LOSEC BYTE		;RESET HISEC	
64842 255	DEFB 255	64899 43	DEC HL
;END OF PRINT MARKER		;SKIP ":"	
64843 60	FRACT DEFB 60	64900 43	DEC HL
;FRACTION PART OF SEC CALL HERE:		;TO LOMIN	
64844 243	CLOCK DI	64901 52	INC (HL)
64845 197	PUSH BC	;TICK LOMIN	
;PUSH ALL REGISTERS		64902 126	LD A, (HL)
64846 213	PUSH DE	64903 254,58	CP 58
64847 229	PUSH HL	;IS COUNT TO "10"?	
64848 245	PUSH AF	64905 32,42	JR NZ,PRINT
64849 8	EX AF,AF'	;READY TO PRINT IF NOT	
64850 245	PUSH AF	64907 54,48	LD (HL),48
64851 217	EXX	;RESET LOMIN	
64852 197	PUSH BC	64909 43	DEC HL
64853 213	PUSH DE	;TO HIMIN	
64854 229	PUSH HL	64910 52	INC (HL)
64855 42,136,92	LD HL, (SPOS)	;TICK HIMIN	
;WE MUST SAVE TOP SCREEN		64911 126	LD A, (HL)
64858 229	PUSH HL	64912 254,54	CP 54
AS WELL		;IS COUNT TO "6"?	
64859 42,132,92	LD HL, (DFCC)	64914 32,33	JR NZ,PRINT
64862 229	PUSH HL	;READY TO PRINT IF NOT	
64863 58,60,92	LD A, (TVFLAG)	64916 54,48	LD (HL),48
64866 245	PUSH AF	;RESET HIMIN	
64867 203,135	RES 1,A	64918 43	DEC HL
;MAKE SURE IN PRINT TO TOP SCR		;SKIP COLON AGAIN	
64869 50,60,92	LD (TVFLAG),A	64919 43	DEC HL
64872 33,75,253	LD HL,FRACT	;TO LOHR	
;POINT HL AT FRACT ADDR		64920 52	INC (HL)
64875 53	DEC (HL)	;TICK LOHR	
;TICK FRACTION OF SEC		64921 126	LD A, (HL)
64876 32,71	JR NZ, PRINT	64922 254,52	CP 52
;READY TO PRINT IF <>0		;IS COUNT TO "4"?	
64878 54,60	LD (HL),60	64924 40,11	JR Z,TEST
;RESET FRACTION		;JUMP TO SEE IF NEW DAY	
64880 43	DEC HL	64926 126	LD A, (HL)
;SKIP THE END MARKER		64927 254,58	CP 58
64881 43	DEC HL	;IS COUNT TO "10"?	
;AT LOSEC		64929 32,18	JR NZ,PRINT
64882 52	INC (HL)		


```

;READY TO PRINT IF NOT
64931 54,48      LD (HL),49
;RESET LOHR
64933 43         DEC HL
;TO HIHR
64934 52         INC (HL)
;TICK HIHR
64935 24,12      JR PRINT
;READY TO PRINT
64937 43         TEST    DEC HL
;TO HIHR
64938 126        LD A,(HL)
64939 35         INC HL
;BACK TO LOHR
64940 254,50     CP 50
; IS HIHR COUNT TO "2"?
64942 32,238     JR NZ,RETURN
;RETURN TO MAIN IF NOT
64944 54,48      LD (HL),48
;RESET LOHR AS NEW DAY
64946 43         DEC HL
;TO HIHR
64947 54,48      LD (HL),48
;RESET HIHR
64949 33,63,253 PRINT LD HL,DATA
64952 126        NEXT   LD A,(HL)
64953 254,255    CP 255
;IS CHR END MARKER?
64955 40,4       JR Z,DONE
;FINISHED WITH PRINT
64957 215        RST 16
;PRINT IT
64958 35         INC HL
;TO NEXT CHR
64959 24,247     JR NEXT
;REPEAT
64961 241        DONE   POP AF
;RESTORE SAVED SYSTEM VARS
64962 50,60,92   LD (TVFLAG),A
64965 225        POP HL
64966 34,132,92  LD (DFCC),HL
64969 225        POP HL
64970 34,136,92  LD (SPOS),HL
;AT THIS POINT WE COULD CALL OTHER
ROUTINE TO DO SOMETHING ELSE BEFORE
RETURNING IF WE LIKED
64973 225        POP HL
;RESTORE ALL REGISTERS
64974 209        POP DE
64975 193        POP BC
64976 217        EXX
64977 241        POP AF
64978 8          EX AF,AF'
64979 245        POP AF
64980 225        POP HL
64981 209        POP DE
64982 193        POP BC
64983 205,56,0   CALL 56

```

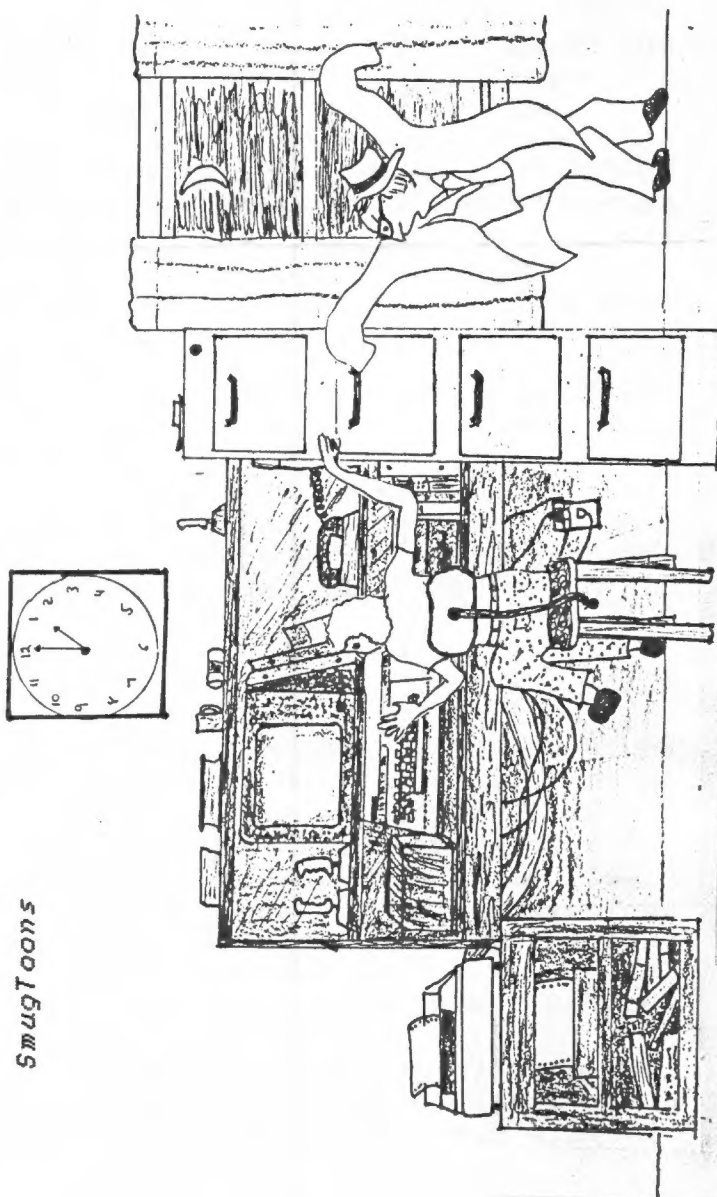
```

;NOW DO THE REGULAR INTERRUPT
64986 251        EI
64987 237,77     RETI

```

Note I have indicated where to call another routine if you desire to do something else before returning. Put it in there with a call as you have all the registers still pushed. But remember you are still in DI mode. The EI at 64986 isn't necessary as there is an EI at the end of the regular interrupt routine. It's there so no one would say he didn't do it.

For the basic program see next month's SMUG Bytes. This article has to be continued.



SmugToons

Why husbands leave home! £33

FEBRUARY MEETING

Well the meeting again started on time so don't be late or you will miss part of the meeting. The meeting covered one major item: The changes to the By-Laws. It was determined, by a majority vote, to adopt this change: The board will not be allowed to purchases, without member approval, any item costing more than \$500 or 1/2 of the treasury, which ever is less. We then had a nice discussion on the new IBM PC emulator for the QL. Quite a few members were interested in the emulator. Neal explained that it's a software driven device that will allow 100% IBM compatibility. He's ordered a copy but has'nt arrived yet. The package is offered by both RMG Enterprises and Sharps. They both are offering 2 versions. The first is the "Vanilla" version which is only software necessary to run the MS-DOS but not MS-DOS its self. The second a "Chocolate" version includes MS-DOS plus GW Basic. Neal ordered the "Chocolate" version. More on the emulator at the March meeting, if it arrives in time.

Don't forget the Computerfest in May in the DC area.

Lloyd was unable to demo his clock program as there was no TS2068 computer with ARECO disk drives. Ed. note: Put it on tape Lloyd.

Editors Paragraph

Revision to my comment last month on the latest Time Designs. On 2/8/89 I got the Sept./Oct. issue. and a free copy of the Z88 mag. Pipeline. Also a letter from Tim apologizing for the long delay in publishing. The club also received it's issue so looks like TDM is back on track. Keep it up Tim.

I am glad to see it, as TDM is a great magazine and covers the whole Sinclair spectrum, no pun intended.

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QL "C" - The Two Versions

The problem with using language other than Basic on a 2068 or a QL machine is that such a language has to be compiled after it is written. This is true of Fortran, Forth, Pascal, C or what have you. This means investing in a compiler and an editor at the very minimum. Most of the time a word processor can't be used as it has a special character other than CHAR (13) for an end of line character.

Now, there are compilers and there are compilers. For an example, we here at SMUG looked into learning an advanced language on the QL and after going into some in-depth research found that the original Superbasic of the QL was designed with the C language in mind as lots of the concepts are right from the C language. Further investigation showed "C" contains the entire Pascal language. Two compilers for C are available: Lattice C (Metacomco) and Digital C. What a difference between the

two in capability and conformity to standardized C. C source files are supposed to be compatible with any compiler if they conform to standard C--you can load them into any type of a computer, recompile them and they should run. Lattice C is such a compiler. Digital C is not. It uses a bastardized form of notations for handling floating point numbers (any decimal point number) WITH only half a page of explanation of how to use the %*@*/? thing.

This is what I call a disservice to the poor end user. If deviating from the accepted norm you must spend time explaining all the deviations to the poor user --in full detail. At times, the manual will skip over these so called changes or just explain it poorly and briefly. Even an expert would have a hard time figuring it out, much less the poor novice who is just getting his feet wet with his first attempt at another language.

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I have found this more than once in the so called basic simplified editions of other languages. It gives this poor guy the idea that he will never get it to working properly. Generally he gives up, chucks the whole idea of learning anything new and we have lost another soul because of academic professorilism (assuming the student knows something that you havn't discussed--the so called "and it is obvious"). A word to the wise, if it doesn't come with a 1 inch thick double sided page manual it's not worth it. Or to put it another way, "Don't buy simplified cut down versions for a starter. They have taken too many shortcuts to cut it down."

Yes, I do have a bitter taste for Digital C.



PRESIDENTS MESSAGE

The club is strong financially and membership is stable. In fact growing. We have had old members return and new members join.

I hope some of you menbers will bring in your computer projects. The club would be interested in seeing what you are doing. If you want something special at the meeting please call me and I will make arrangements.

Upcomming fests:

LAMARSFEST-Lake County Fairgrounds
Grayslake, IL. 3/13/89, \$3 cost.
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Dane County Expo Center Forum Bldg.
Madison WI. 4/9/89, \$3 cost.
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I. 5/6/89 \$3 cost.

Thats all for now. Neal CSN.

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February 1989

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SMUG Bytes

Artistic Displays

Our resident cartoonist, Esther, has submitted two cartoons for the newsletter. If you like/don't like them please let us know. Also if you have any cartoons, programs or information you would like to pass on please let me know as there is always room, in here, for more.

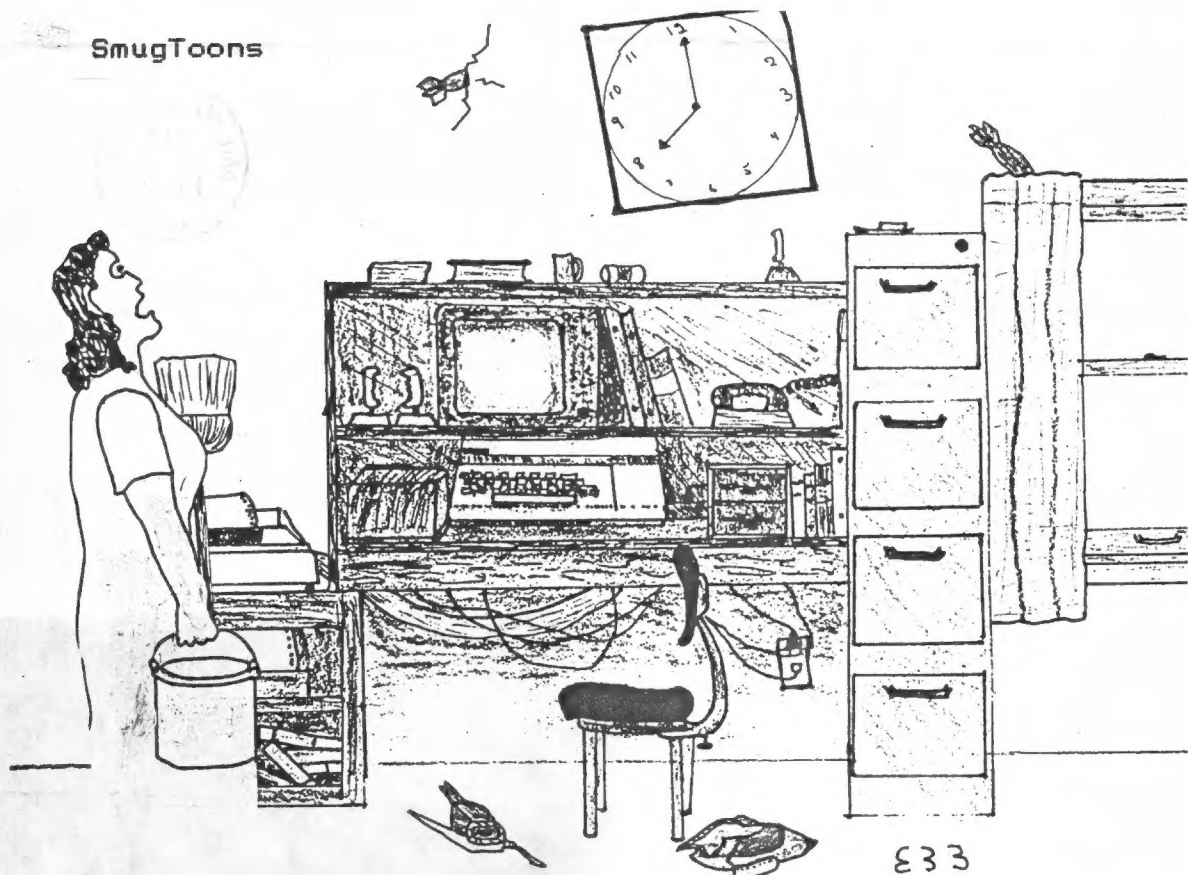
TS2068 DIGITIZER

The club is selling digitizer boards. - For one assembled, tested and shipped the cost will be \$49.95 + \$3 shipping and handling. If you only want the bare board it will be \$19.95 + \$3 s&h. The board has a leading edge connector and is ready for a mother board. If you want a feed thru connector, like the AERCO, there is an extra charge of \$5.

The price includes the hardware and software, on cassette, for the digitizer. The bare board also includes the schematic and parts list.

If you wish to purchase a board we feel the turnaround will be 6 to 8 weeks. This offer is open to any who want to put video pictures on your TS2068.

We only expect to make a limited number of these boards so if you are interested please send in your order soon. Depending on orders we will order either 50 or 100 boards. We must have the money with your order as it will cost more than the club can afford to have them built on speculation.



Morning after the Games Group meeting

The Sinclair Milwaukee Users Group (SMUG)

is a not-for-profit group devoted to serving the interests of those who own, use, educate and/or interested in the Timex/Sinclair family of computers.

Editor and contact person: Bill Heberlein (414) 527-2191

SMUG maintains a gratis exchange of newsletters with approximately 30 Users Groups accross the U.S. Clubs not sending a newsletter, to us, for six months are automatically taken off the list.

Newsletter subscription is available for only \$10 per year to non members or free with a club membership. A club membership is \$20 per year for a family.

Advertising rates are \$10 for 1/2 page for six months. The add copy may be changed each month but you must supply the copy.

The next meeting of SMUG will be held on: Wednesday, March 1, 1989

6pm Set up
6:30 Bills demo QL window prog.
Dick demo the "C" editor
7:30 Business Meeting
8:30 Lloyds demo 2068 Clock
Neal demo IBM emulator
10:30 ?

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*Thanks For the renewal. I am getting
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